

WHAT IS CLAIMED IS:

[c1] An image pickup device comprising an image pickup unit including a lens and an image sensor, and a control unit for processing the image picked up by the image pickup unit and storing the processed image in an internal memory or a predetermined storage medium,

wherein the control unit includes

a face image extraction part for extracting the face image contained in the image picked up by the image pickup unit,

an inference part for executing the process of inferring the attributes of a person constituting an object based on the feature amounts in an image area including the face image extracted,

an image pickup conditions adjusting part for adjusting the image pickup conditions for the image pickup unit based on the result of inference in the inference part, and

an information processing part for storing in selected one of the memory and the storage medium the image obtained under the image pickup conditions adjusted by the image pickup conditions adjusting part.

[c2] The image pickup device according to claim 1, wherein the inference part includes an inference part for executing the inference of at least one of the race, age and sex as the attributes.

[c3] The image pickup device according to claim 1, wherein the information processing part includes a part for producing the link information containing the position of the face image extracted by the face image extraction part and the inference information obtained by the inference process executed by the inference part, and

wherein the link information is stored in selected one of the memory and the storage medium together with the image picked up by the image pickup unit.

[c4] The image pickup device according to claim 1, further comprising a distance recognition part for recognizing the distance to an object,

wherein the face image extraction part includes a part for specifying the size of the face image to be extracted, based on the result of recognition by the distance recognition part.

[c5] The image pickup device according to claim 1, wherein the control unit includes the focal length

adjusting part for adjusting the focal length of a lens of the image pickup unit in accordance with the result of extraction by the face image extraction part.

[c6] The image pickup device according to claim 1, further comprising a first operating unit for designating the range of extracting a face image,

wherein the face image extraction part includes a part for limiting the face image extraction area in the image picked up by the image pickup unit in accordance with the designating operation of the first operating unit.

[c7] The image pickup device according to claim 1, further comprising a second operating unit for designating the deletion of the result of extracting a predetermined part of the face image extracted,

wherein the face image extraction part includes a part for updating the result of extracting the face image in accordance with the designating operation of the second operating unit.

[c8] The image pickup device according to claim 1, further comprising a third operating unit for performing the operation of correcting the inference information obtained by the inference process of the inference part,

wherein the information processing part includes a part for correcting the inference information in accordance with the correcting operation of the third operating unit.

[c9] The image pickup device according to claim 1, further comprising a fourth operating unit for correcting the image pickup conditions adjusted by the image pickup conditions adjusting part,

wherein the image pickup conditions adjusting part includes a part for readjusting the image pickup conditions in accordance with the correcting operation of the fourth operating unit.

[c10] The image pickup device according to claim 1, wherein the information processing part includes a part for determining the direction of the face of an object in the image based on the result of extraction of the image stored in selected one of the memory and the storage medium by the face image extraction part, and a part for rotating the image in such a manner that the face direction conforms with a predetermined reference direction in the case where the determined face direction is different from the reference direction.

[c11] The image pickup device according to claim 1, further comprising a feature amount storage part for storing the feature amount of the face image already extracted,

wherein the face image extraction part includes a specified image extraction part for extracting an image area including the feature amount of the specified face image stored in the feature amount storage part from the image picked up by the image pickup unit.

[c12] The image pickup device according to claim 1, further comprising an object storage part for storing the feature amount of the face image of a specified object,

wherein the information processing part compares the feature amount of the face image extracted by the face image extraction part with the feature amount stored in the object storage part, so that in the case where the comparing process shows that the extracted face image is that of the specified object, the link information containing the inference information obtained by the inference process of the inference part and the information for identifying the specified object is produced and stored in selected one of the memory and

the storage medium together with the image picked up by the image pickup unit.

[c13] An image pickup device comprising an image pickup unit including a lens and an image sensor, and a control unit for processing the image picked up by the image pickup unit and storing the processed image in selected one of an internal memory and a predetermined storage medium,

wherein the control unit includes

a registration part for holding the feature amount of the face image of each of a predetermined number of objects and the information required for adjusting the optimum image pickup conditions in correspondence with the identification information unique to the object,

a face image extraction part for extracting the face image contained in the image picked up by the image pickup unit,

an inference part for inferring the object by comparing the feature amount of the face image extracted by the face image extraction part with the information registered in the registration part,

an image pickup conditions adjusting part for adjusting the image pickup conditions for the image

pickup unit using the registered information of the object estimated by the inference part, and

an information processing part for storing in selected one of the memory and the storage medium the image obtained under the image pickup conditions adjusted by the image pickup conditions adjusting part.

[c14] The image pickup device according to claim 13, wherein the control unit includes a part for receiving the input of the information required for adjusting the optimum image pickup conditions and the identification information of the object in response to the image pickup operation of a predetermined object for registration in the registration part, and storing the input information in the registration part together with the face image of the object.

[c15] The image pickup device according to claim 13, wherein the information processing part includes a part for producing the link information containing the position of the face image extracted by the face image extraction part and the inference information obtained by the inference process executed by the inference part, and

wherein the link information is stored in selected

one of the memory and the storage medium together with the image picked up by the image pickup unit.

[c16] The image pickup device according to claim 13, further comprising a distance recognition part for recognizing the distance to an object,

wherein the face image extraction part includes a part for specifying the size of the face image to be extracted, based on the result of recognition by the distance recognition part.

[c17] The image pickup device according to claim 13, wherein the control unit includes a focal length adjusting part for adjusting the focal length of the lens of the image pickup unit in accordance with the result of extraction by the face image extraction part.

[c18] The image pickup device according to claim 13, further comprising a first operating unit for designating the range of extraction of the face image,

wherein the face image extraction part includes a part for limiting the face image extraction area in the image picked up by the image pickup unit in accordance with the designating operation of the first operating unit.



[c19] The image pickup device according to claim 13, further comprising a second operating unit for designating the deletion of the result of extracting a predetermined part of the face image extracted,

wherein the face image extraction part includes a part for updating the result of extracting the face image in accordance with the designating operation of the second operating unit.

[c20] The image pickup device according to claim 13, further comprising a third operating unit for performing the operation of correcting the inference information acquired by the inference process of the inference part,

wherein the information processing part includes a part for correcting the inference information in accordance with the correcting operation of the third operating unit.

[c21] The image pickup device according to claim 13, further comprising a fourth operating unit for correcting the image pickup conditions adjusted by the image pickup conditions adjusting part,

wherein the image pickup conditions adjusting part includes a part for readjusting the image pickup conditions in accordance with the correcting operation

of the fourth operating unit.

[c22] The image pickup device according to claim 13, wherein the information processing part includes a part for determining the direction of the object face in the image stored in selected one of the memory and the storage medium based on the result of extraction by the face image extraction part, and a part for rotating the image in such a manner that the direction of the face conforms with a predetermined reference direction in the case where the determined direction of the face is different from the predetermined reference direction.

[c23] A program to be executed by an image pickup device comprising an image pickup unit including a lens and an image sensor, and a control unit for processing the image picked up by the image pickup unit and storing the processed image in selected one of an internal memory and a predetermined storage medium, the program comprising:

a step of extracting the face image contained in the image picked up by the image pickup unit;

a step of inferring the attributes of a person constituting an object based on the feature amount in an image area including the face image upon extraction of

the face image;

a step of adjusting the image pickup conditions for the image pickup unit based on the result of inference in the inference step; and

an information processing step of storing in selected one of the memory and the storage medium the image acquired under the image pickup conditions adjusted by the image pickup conditions adjusting step.

[c24] A program to be executed by an image pickup device comprising an image pickup unit including a lens and an image sensor, and a control unit for processing the image picked up by the image pickup unit and storing the processed image in selected one of an internal memory and a predetermined storage medium, the program comprising the steps of:

registering the registration information on the feature amount of the face image of each of a predetermined number of objects and the information required for adjusting the optimum image pickup conditions in correspondence with the identification information unique to the object;

extracting the face image contained in the image picked up by the image pickup unit;

estimating the object by comparing the registration information with the feature amount of the face image extracted in the face image extraction step;

adjusting the image pickup conditions for the image pickup device using the registration information of the object estimated in the estimation step; and

storing in selected one of the memory and the storage medium the image acquired under the image pickup conditions adjusted in the image pickup conditions adjusting step.

[c25] A method to be executed by an image pickup device comprising an image pickup unit including a lens and an image sensor, and a control unit for processing the image picked up by the image pickup unit and storing the processed image in selected one of an internal memory and a predetermined storage medium, the method comprising:

a step of extracting the face image contained in the image picked up by the image pickup unit;

a step of inferring the attributes of a person constituting an object based on the feature amount in an image area including the face image upon extraction of the face image;

a step of adjusting the image pickup conditions for the image pickup unit based on the result of inference in the inference step; and

an information processing step of storing in selected one of the memory and the storage medium the image acquired under the image pickup conditions adjusted by the image pickup conditions adjusting step.

[c26] A method to be executed by an image pickup device comprising an image pickup unit including a lens and an image sensor, and a control unit for processing the image picked up by the image pickup unit and storing the processed image in selected one of an internal memory and a predetermined storage medium, the method comprising the steps of:

registering the registration information on the feature amount of the face image of each of a predetermined number of objects and the information required for adjusting the optimum image pickup conditions in correspondence with the identification information unique to the object;

extracting the face image contained in the image picked up by the image pickup unit;

estimating the object by comparing the feature

amount of the face image extracted in the face image extraction step with the registration information;

adjusting the image pickup conditions for the image pickup unit using the registration information on the object estimated by the estimation step; and

storing in selected one of the memory and the storage medium the image acquired under the image pickup conditions adjusted in the image pickup conditions adjusting step.